

ATC ATC AAC CAC TCT TCA CTC TTC AAC TCT CCT CTC TTG GAT ATC TAT CTC TTC ACC ATG	60
Met	
1	
GTC AAG TTC GCT TCC GTC GTT GCA CTT GTT GCT CCC CTG GCT GCT GCC GCT CCT CAG GAG	120
Val Lys. Phe Ala Ser Val Val Ala Leu Val Ala Pro Leu Ala Ala Pro Gln Glu	
5 10 15 20	
ATC CCC AAC ATT GTT GGT GGC ACT TCT GCC AGC GCT GGT TTT CCC TTC ATC GTG AGC	180
Ile Pro Asn Ile Val Gly Gly Thr Ser Ala Ser Ala Gly Asp Phe Pro Phe Ile Val Ser	
25 30 35 40	
ATT AGC CGC AAC GGT GGC CCC TGG TGT GGA GGT TCT CTC CTC AAC GCC AAC ACC GTC TTG	240
Ile Ser Arg Asn Gly Gly Pro Trp Cys Gly Ser Leu Leu Asn Thr Val Leu	
45 50 55 60	
ACT GCT GCC CAC TGC GTT TCC GGA TAC GCT CAG AGC GGT TTC CAG ATT CGT GCT GGC AGT	300
Thr Ala Ala His Cys Val Ser Gly Tyr Ala Gln Ser Gly Phe Gln Ile Arg Ala Gly Ser	
65 70 75 80	
CTG TCT CGC ACT TCT GGT GGT ATT ACC TCC TCG CTT TCC TCC GTC AGA GTT CAC CCT AGC	360
Leu Ser Arg Thr Ser Ser Gly Gly Ile Thr Ser Ser Ser Ser Val Arg Val His Pro Ser	
85 90 95 100	
TAC AGC GGA AAC AAC GAT CTT GCT ATT CTG AAG CTC TCT ACT TCC ATC CCC TCC GGC	420
Tyr Ser Gly Asn Asn Asp Leu Ala Ile Leu Lys Leu Ser Thr Ser Ile Pro Ser Gly	
105 110 115 120	
GGA AAC ATC GGC TAT GCT CGC CTG GCT GCT TCC GGC TCT GAC CCT GTC GCT GGA TCT TCT	480
Gly Asn Ile Gly Tyr Ala Arg Leu Ala Ala Ser Gly Ser Asp Pro Val Ala Gly Ser Ser	
125 130 135 140	

Fig. 1A

GCC ACT GTT GCT GGC TGG GGC GCT ACC TCT GAG GGC GGC AGC TCT ACT CCC GTC AAC CTT 540  
 Ala Thr Val Ala Gly Trp Gly Ala Thr Ser Glu Gly Gly Ser Ser Thr Pro Val Asn Leu 145 150 155 160  
  
 CTG AAG GTT ACT GTC CCT ATC GTC TCT GGT ACC TGC CGA GCT CAG TAC GGC ACC TCC 600  
 Leu Lys Val Thr Val Pro Ile Val Ser Arg Ala Thr Cys Arg Ala Gln Tyr Gly Thr Ser 165 170 175 180  
  
 GCC ATC ACC AAC CAG ATG TTC TGT GCT GGT GGT TCT TCC GGT GGC AAG GAC TCT TGC CAG 660  
 Ala Ile Thr Asn Gln Met Phe Cys Ala Gly Val Ser Ser Thr Ser Gly Lys Asp Ser Cys Gln 185 190 195 200  
  
 GGT GAC AGC GGC CCC ATC GTC GAC AGC TCC AAC ACT CTT ATC GGT GCT GTC TCT TGG 720  
 Gly Asp Ser Gly Gly Pro Ile Val Asp Ser Ser Asn Thr Leu Ile Gly Ala Val Ser Trp 205 210 215 220  
  
 GGT AAC GGA TGT GCC CGA CCC AAC TAC TCT GGT GTC TAT GCC AGC GTT GGT GCT CTC CGC 780  
 Gly Asn Gly Cys Ala Arg Pro Asn Tyr Ser Gly Val Tyr Ala Ser Val Gly Ala Leu Arg 225 230 235 240  
  
 TCT TTC ATT GAC ACC TAT GCT TAA ATA CCT TGT TGG AAG CGT CGA GAT GTT CCT TGA ATA 840  
 Ser Phe Ile Asp Thr Tyr Ala  
  
 TTC TCT AGC TTG AGT CTT GGA TAC GAA ACC TGT TTG AGA AAT AGG TTT CAA CGA GTT AAG 900  
  
 AAG ATA TGA GTT GAT TTC AGT TGG ATC TTA GTC CTG GTT GCT CGT AAT AGA GCA ATC TAG 960  
  
 ATA GCC CAA ATT GAA TAT GAA ATT TGA TGA AAA TAT TC 998

Fig. 1B

ATC ATC AAC CAC TCT TCA CTC TTC AAC TCT CCT CTC TTG GAT ATC TAT CTC TTC ACC ATG	60
Met	
1	
GTC AAG TTC GCT TCC GTC GTT GCA CTT GTT GCT CCC CTG GCT GCC GCT CCT CAG GAG	120
Val Lys Phe Ala Ser Val Val Ala Leu Val Ala Pro Leu Ala Ala Pro Gln Glu	
5 10 15 20	
ATC CCC AAC ATT GTT GGT GGC ACT TCT GCC AGC GCT GGC GAC TTT CCC TTC ATC GTG AGC	180
Ile Pro Asn Ile Val Gly Gly Thr Ser Ala Ser Ala Gly Asp Phe Pro Phe Ile Val Ser	
25 30 35 40	
ATT AGC CGC AAC GGT GGC CCC TGG TGT GGA GGT TCT CTC CTC AAC GCC AAC ACC GTC TTG	240
Ile Ser Arg Asn Gly Gly Pro Trp Cys Gly Gly Ser Leu Leu Asn Thr Val Leu	
45 50 55 60	
ACT GCT GCC CAC TGC GTT TCC GGA TAC GCT CAG AGC GGT TTC CAG ATT CGT GCT GGC AGT	300
Thr Ala Ala His Cys Val Ser Gly Tyr Ala Gln Ser Gly Phe Gln Ile Arg Ala Gly Ser	
65 70 75 80	
CTG TCT CGC ACT TCT GGT GGT ATT ACC TCC TCG CTT TCC TCC GTC AGA GTT CAC CCT AGC	360
Leu Ser Arg Thr Ser Gly Gly Ile Thr Ser Ser Ser Val Arg Val His Pro Ser	
85 90 95 100	
TAC AGC GGA AAC AAC GAT CTT GCT ATT CTG AAG CTC TCT ACT TCC ATC CCC TCC GGC	420
Tyr Ser Gly Asn Asn Asp Leu Ala Ile Leu Lys Leu Ser Thr Ser Ile Pro Ser Gly	
105 110 115 120	
GGA AAC ATC GGC TAT GCT CGC CTG GCT GCT TCC GGC TCT GAC CCT GTC GCT GGA TCT TCT	480
Gly Asn Ile Gly Tyr Ala Arg Leu Ala Ala Ser Gly Ser Asp Pro Val Ala Gly Ser Ser	
125 130 135 140	

Fig. 2A

GCC ACT ACT GCT GGC TGG GGC GCT ACC TCT GAG GGC GGC AGC TCT ACT CCC GTC AAC CTT	540
Ala Thr Thr Ala Gly Trp Gly Ala Thr Ser Glu Gly Gly Ser Ser Thr Pro Val Asn Leu	
145 150 155 160	
CTG AAG GTT ACT GTC CCT ATC GTC TCT CGT GCT ACC TGC CGA GCT CAG TAC GGC ACC TCC	600
Leu Lys Val Thr Val Pro Ile Val Ser Arg Ala Thr Cys Arg Ala Gln Tyr Gly Thr Ser	
165 170 175 180	
GCC ATC ACC AAC CAG ATG TTC TGT GCT GGT GCT TCC GGT GGC TCT TCT TGC ATG GGT GAC	660
Ala Ile Thr Asn Gln Met Phe Cys Ala Gly Ala Ser Gly Gly Ser Ser Cys Met Gly Asp	
185 190 195 200	
AGC GGC GGC CCC ATC GTC GAC AGC TCC AAC ACT CTT ATC GGT ACT GTC TCT TGG GGT TCT	720
Ser Gly Gly Pro Ile Val Asp Ser Ser Asn Thr Leu Ile Gly Ile Val Ser Trp Gly Ser	
205 210 215 220	
GGA ACT TGT TCT ACT TCT ACT CCT GGT GTC TAT GCC AGC GGT GGT GCT CTC CGC TCT TTC	780
Gly Thr Cys Ser Thr Ser Thr Ser Thr Val Tyr Ala Ser Val Gly Ala Leu Arg Ser Phe	
225 230 235 240	
ATT GAC ACC TAT GCT TAA ATA CCT TGT TGG AAG CGT CGA GAT GTT CCT TGA ATA TTC TCT	840
Ile Asp Thr Tyr Ala	
245	
AGC TTG AGT CTT GGA TAC GAA ACC TGT TGT TGG AGA AAT AGG TTT CAA CGA GTT AAG AAG ATA	900
TGA GTT GAT TTC AGT TGG ATC TTA GTC CTG GTT GCT CGT AAT AGA GCA ATC TAG ATA GCC	960
CAA ATT GAA TAT GAA ATT TGA TGA AAA TAT TC	992

Fig. 2B

<i>F. oxysporum</i> trypsin	I V G G T S A S A G D F P F I V
<i>F. oxysporum</i> trypsin mutant	I V G G T S A S A G D F P F I V
Bovine chymotrypsin A	I V N G E E A V P G S W P Q V
S I S R N G G P W C G G S L L N A N T V L T A A H C V S G Y A Q S G F Q I R A G	
S I S R N G G P W C G G S L L N A N T V L T A A H C V S G Y A Q S G F Q I R A G	
S L Q D K T G F H F C G G S L I N E W V T A A H C - - G V T T S D V V A G	
S L - - - S R T S G G I T S S L S S V R V H P S Y S - - G N N N D L A I L K L S	
S L - - - S R T S G G I T S S L S S V R V H P S Y S - - G N N N D L A I L K L S	
E F D Q G S S E K I Q K L K I A K V F K N S K Y N S L T I N N D I T L L K L S	
T S I P S G G N I G Y A R L A A S G S D P V A G S S A T V A G W G A T S E G G S	
T S I P S G G N I G Y A R L A A S G S D P V A G S S A T V A G W G A T S E G G S	
T A A S F S Q T V S A V C L P S A S D D F A A G T T C V T T G W G L T R Y T N A	
S T P V N L L K V T V P I V S R A T C R A Q Y G T S A I T N Q M F C A G V S S G	
S T P V N L L K V T V P I V S R A T C R A Q Y G T S A I T N Q M F C A G - A S G	
N T P D R L Q Q A S L P L S N T N C K K Y W G T - K I K D A M I C A G - - A S	
G K D S C Q G D S G G P I V D S - - S N T L I G A V S W G N G - C A R P N Y S	
G - S S C M G D S G G P I V D S - - S N T L I G I V S W G S G T C - S T S T P	
G V S S C M G D S G G P L V C K K N G A W T L V G I V S W G S S T C - S T S T P	
G V Y A S V G A L R S F I D T Y A	
G V Y A S V G A L R S F I D T Y A	
G V Y A R V T A L V N W V Q Q T L A A N	

Fig. 3

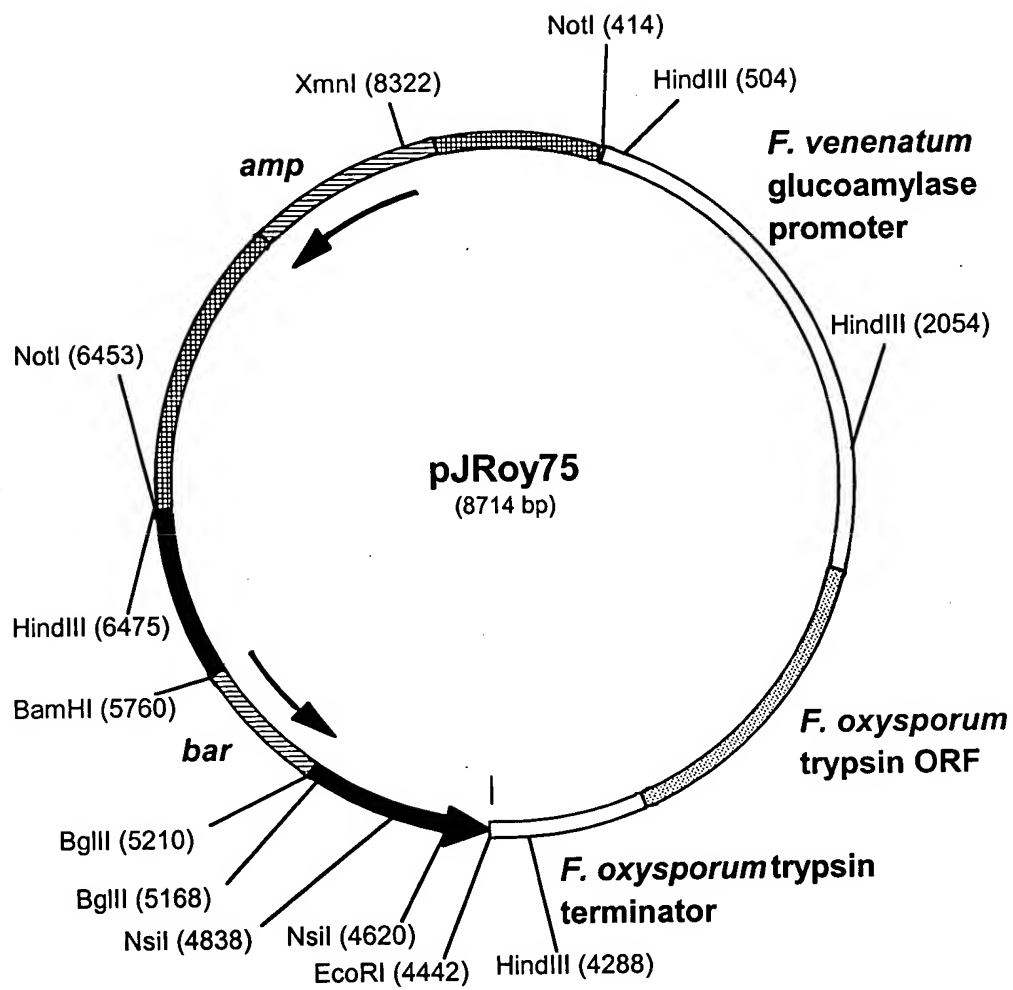


Fig. 4

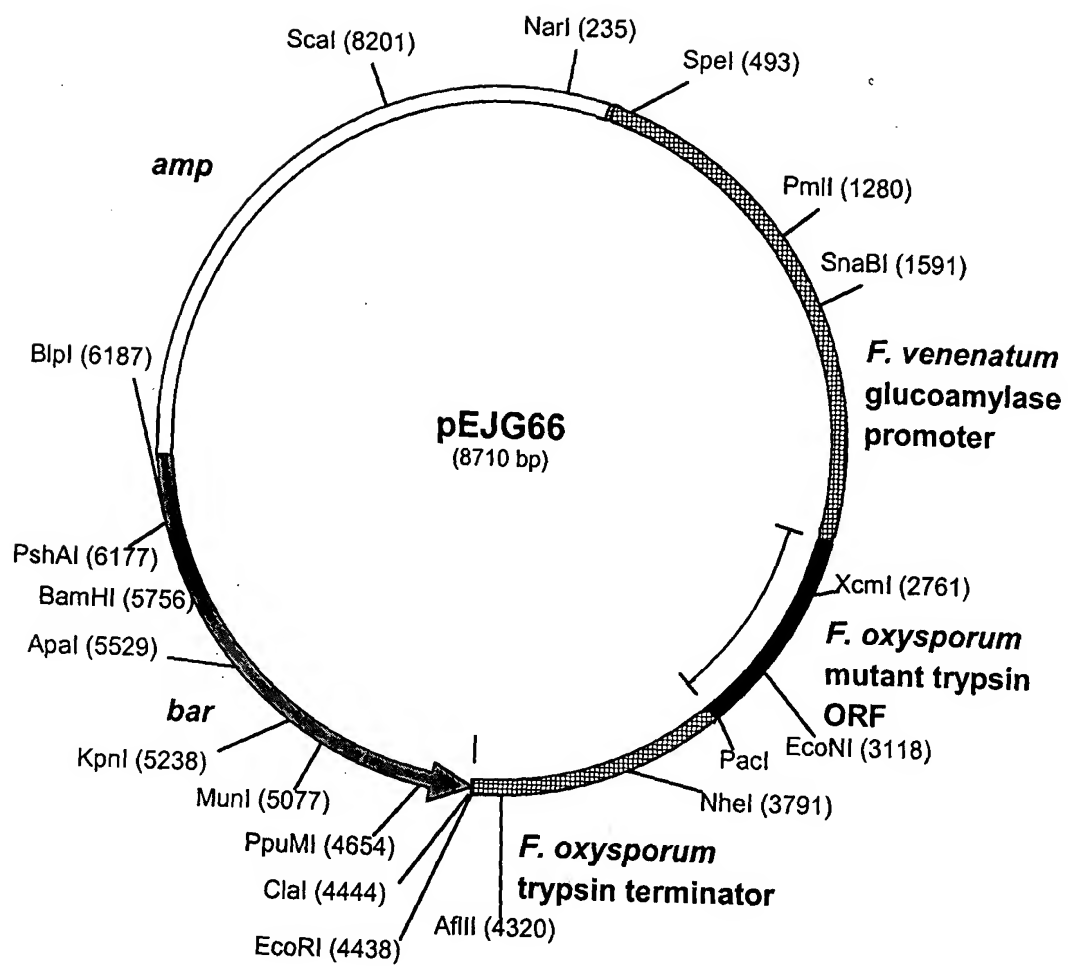


Fig. 5

## Peptide Substrate Fingerprinting

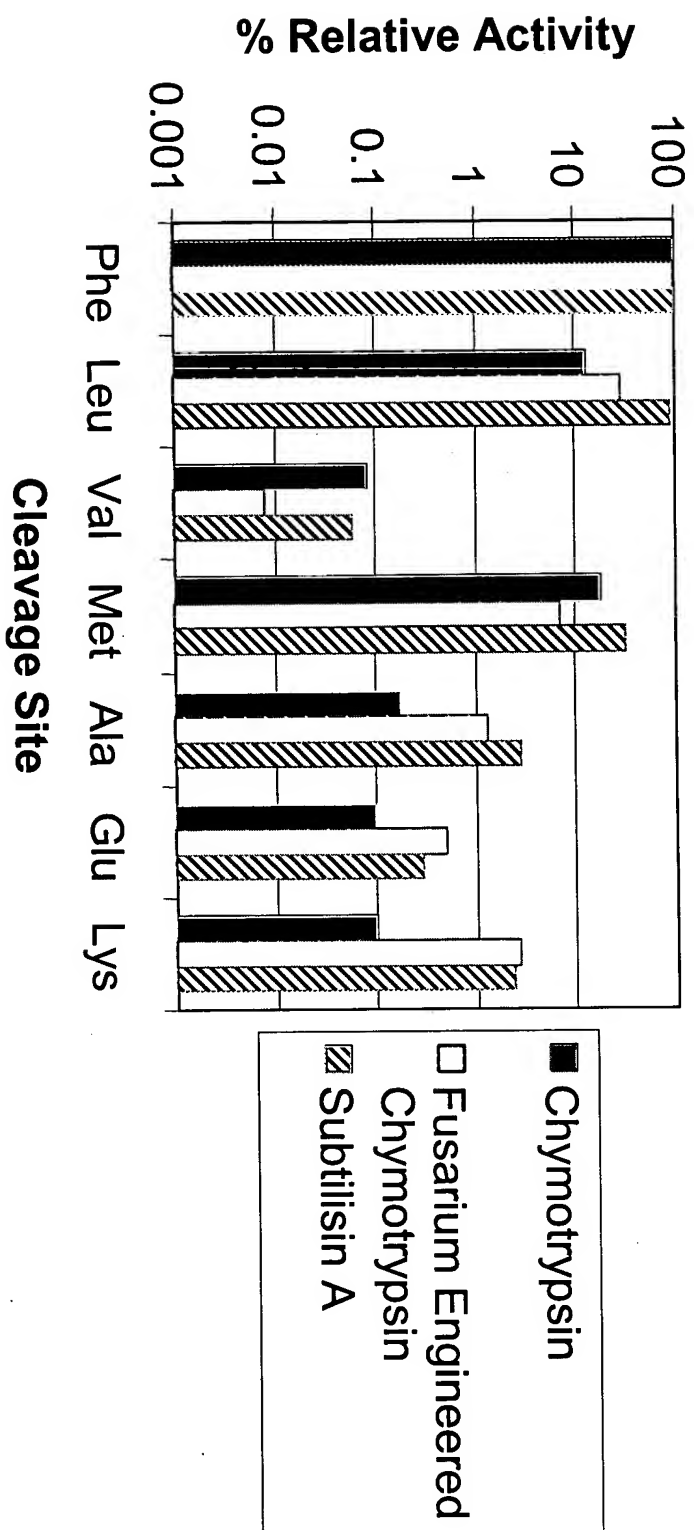


Fig. 6



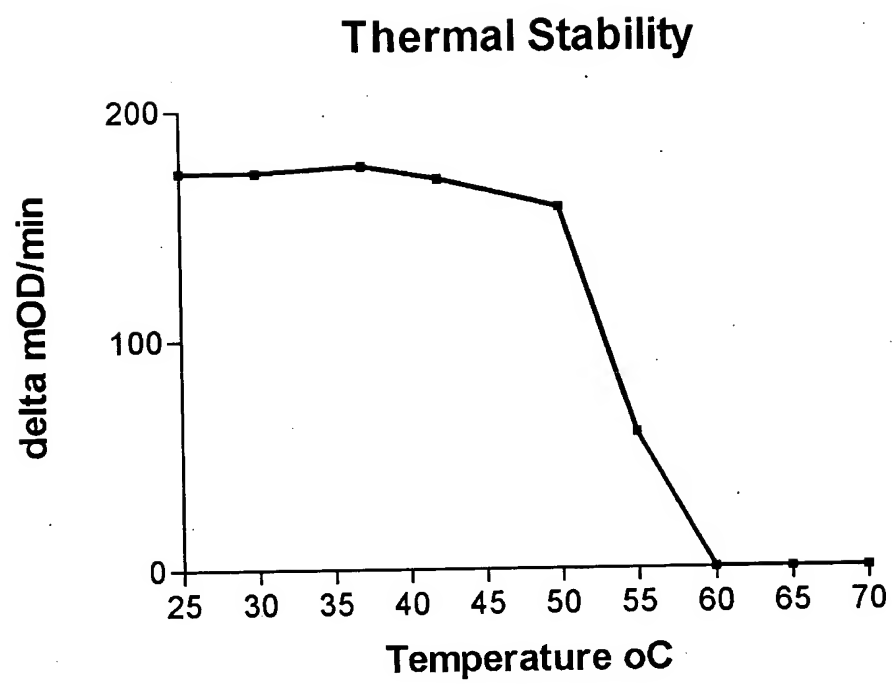


Fig. 7

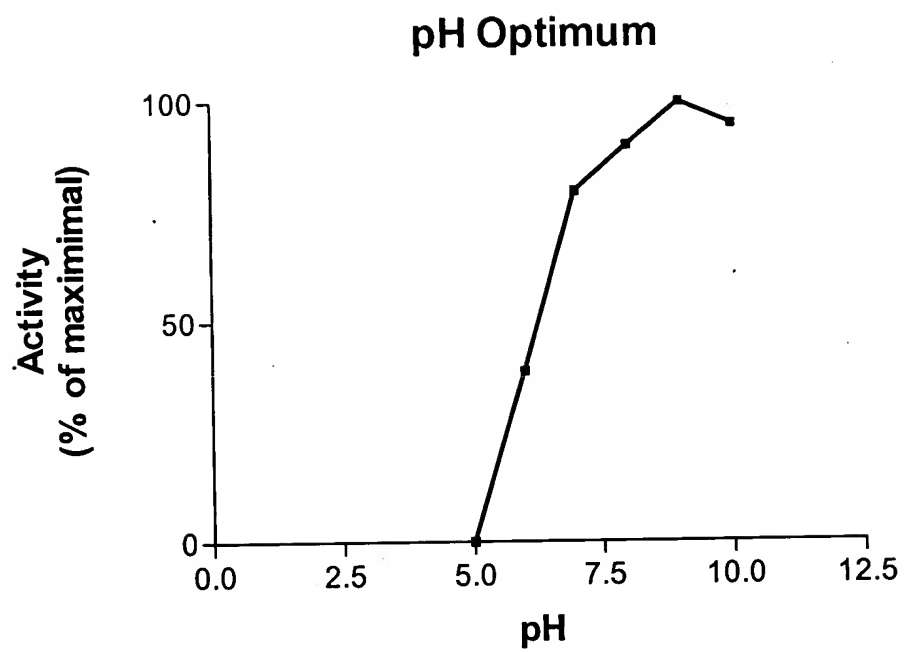


Fig. 8